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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/541,008	07/18/2005	Hartmut Rudmann	FRG-16141	9028
40854 7590 07/10/2009 RANKIN, HILL, & CLARK LLP 38210 Glenn Avenue WILLOUGHBY, OH 44094-7808				
EXAMINER				
HUDA, SAIED M				
ART UNIT		PAPER NUMBER		
1791				
MAIL DATE		DELIVERY MODE		
07/10/2009		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/541,008

**Applicant(s)**

RUDMANN ET AL.

**Examiner**

SAEED M. HUDA

**Art Unit**

1791

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 13 April 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 18-24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 18-24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☒ Notice of Draftsperson's Patent Drawing Review (PTO-946)
- 3) ☒ Information Disclosure Statement(s) (PTO/CIS-300)
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date: \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date 05/18/2009

**DETAILED ACTION**

***Response to Amendment***

1. The response filed on 05/18/2009 has been fully considered and entered into the record. Claims 2-17 are cancelled and the rejections applying to the cancelled claims withdrawn. New claims 18-24 have been entered

***Response to Arguments***

2. Applicant's arguments with respect to claims 1-2 and 4-10 have been considered but are moot in view of the new ground(s) of rejection, to the extent that the arguments are applicable to the new grounds of rejection; they are addressed below.

***Claim Rejections - 35 USC § 112***

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claim 23 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The phrase the "spacer portion is arranged in a manner that at least one spacer portion border is formed around a replication area in a manner that the spacer portion border at least partially borders the replication area" is not supported in the specification.

The portion of the specification that is most relevant to the claimed subject matter can be found in paragraph 21 which states that "According to yet another special embodiment, the spacer portion may be laid out in a manner that fluid dynamic effects during the replication process are optimized. For example, the spacers can be designed in order to form a barrier to the flow of un-cured deformable replication material at the edge of the substrate. Alternatively, their shape and distribution can be such that it directs the flow of the deformable replication material during the embossing process, for instance to fill a rectangular replication area uniformly and completely". This paragraph does not describe the spacer portion being arranged in a manner that at least one spacer portion border is formed around a replication area in a manner that the spacer portion border at least partially borders the replication area.

***Claim Rejections - 35 USC § 112***

5. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

6. Claim 23 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, it is unclear what is meant by "the spacer portion is arranged in a manner that at least one spacer portion border is formed around a replication area in a manner that the spacer portion border at least partially borders the replication area". Clarification is required. It is also suggested that Applicant reference components in the figures to better convey the invention.

***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 1, 18-21, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi (US 5575962) in view of Bacher et al. (US 5543108) and further in view of Uyterhaeghe et al. (US 6231094).

a. Regarding claim 1, Takahashi teach a method for fabricating optical quality molds with precision microfeatures (title). Takahashi teach that a spacer portion (50) protrudes from the replication surface and is used to impart a depression on a substrate (20) (figures 4a-4b and column 4, lines 38-53) where said substrate has first portion. Takahashi fails to teach the processing steps as claimed.

Bacher teaches a method of making a microstructure body; much like the applicant however fails to mention the use of a replication tool with a spacer and negative. The at least one spacer portion of Bacher comprises at least a portion arranged between the structural features corresponding to different optical elements (figures). Additionally, the material component is brought into contact with the replication surface while the spacer portion abuts against the first surface of the substrate while the material component is between the replication tool and the substrate where a plurality of optical elements can be formed.

It would have been obvious to one having ordinary skill in the art at the time of the invention to use the method of Bacher in the invention of Takahashi because an impression method, as disclosed in Bacher, is a relatively safer production procedure than the etch procedure of Takahashi.

Uytterhaeghe teaches a mold/replication tool (12) which has a spacer, and negative/recession (far left and right of mold). Therefore the use of replication tools with both spacers and negatives was well known in the art of molding at the time of the applicant's invention. Furthermore, Bacher states in column 2, lines 30-45; the shape of the microstructure body is not important, the bodies can be rectangular, pyramidal, frustoconical, or stepped. Therefore it would have been obvious to use a replication tool similar to Uytterhaeghe's because it was well known at the time of the invention to use tools/molds with both spacers and negatives in the art of molding, and the replication tool would provide a different shaped microstructure, which would increase the range of products manufactured by the Bacher process.

Bacher teaches a preliminary product having a **material in a liquid state** (column 3, lines 32-35). Bacher teaches bringing the material component in contact with said replication surface while the **spacer portion abuts** against a stop surface (Figure 1). Bacher also teaches cooling the thermoplastic material, **hardening it and removing it** from the mold (column 3, lines 37-40). It would also happen that the hardened material component will adhere to the first surface of the substrate will form the plurality of optical elements.

- b. Regarding claim 18, Takahashi in view of Bacher et al. and Uyterhaeghe et al. teaches that the spacer portion comprises a plurality of spacers arranged in a regular pattern (Bacher et al. figures).
  - c. Regarding claim 19, Takahashi in view of Bacher et al. and Uyterhaeghe et al. teaches that the spacer portion is contiguous (Bacher et al. figures)
  - d. Regarding claim 20, Takahashi in view of Bacher et al. and Uyterhaeghe et al. teach that it is advisable to apply to the stamp a PTFE coating (Bacher et al. column 3, lines 18-30) (replication tool comprising elastomeric components).
  - e. Regarding claim 21, Takahashi in view of Bacher et al. and Uyterhaeghe et al. teach the use of a rigid backing plate (Bacher et al. figure 1, upper part of 9).
  - f. Regarding claim 23, Takahashi in view of Bacher et al. and Uyterhaeghe teach that the spacer portion is arranged in a manner that at least one spacer portion border is formed around a replication area in a manner that the spacer portion border at least partially borders the replication area (Bacher et al. figures). Though not explicitly disclosed that the spacer portion forms a flow stop or re-directs the liquid material during the replication process, such would be an inherent property of the process in that any liquid material that hits the spacer portion would be forced flow in another direction or to another area.
9. Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi (US 5575962) in view of Bacher et al. (US 5543108) and Uyterhaeghe et al.

(US 6231094) as applied to claim 1 above, and further in view of Hoffman (US 6716754 B2).

The modified invention of Takahashi fails to teach the use of alignment pins. Hoffman teaches an imprint process using mold and imprint material (abstract) similar to that of applicant. Hoffman teaches the use of alignment pins (column 8, lines 24-35). It would have been obvious to one having ordinary skill in the art at the time of the invention to use the pins of Hoffman in the modified invention of Takahashi because this will ensure that the mold and substrate are in proper alignment prior to imprinting.

10. Claim 24 is rejected under 35 U.S.C. 103(a) as being unpatentable over Takahashi (US 5575962) in view of Bacher et al. (US 5543108) and Uytterhaeghe et al. (US 6231094) as applied to claim 20 above, and further in view of Yang et al. (US 2003/0105853 A1).

The modified invention Takahashi fails to teach that the replication tool comprises PDMS. Yang et al. teach an imprint process similar to that of Applicant where a mold is made from PDMS (figure 1). It would have been obvious to one having ordinary skill in the art at the time of the invention to use the PDMS mold of Yang et al. in the modified invention of Takahashi because PDMS is a widely used silicon based organic polymer and is readily available.

1. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP



§ 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

### ***Conclusion***

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to SAEED M. HUDA whose telephone number is (571)270-5514. The examiner can normally be reached on 8:00 - 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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